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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/884,451	06/19/2001	Robert Dolan	101361-0043	1957

7590

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EXAMINER

MALDONADO, JULIO J

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 03/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/884,451

Applicant(s)

DOLAN ET AL.

Examiner

Julio J. Maldonado

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-13 is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The final rejection as set forth in paper No.10 is withdrawn in response to applicants' request for reconsideration.
2. A new rejection is made as set forth in this Office Action.
3. Claims 1-13 are pending in the application.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1 cites "...a fluid other than pure molecular oxygen into the vacuum chamber as a background fluid...". However, this limitation is not included in the specification. Appropriate correction is required. *MPER 2173.05G*).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakaguchi et al. (U.S. 6,313,014) in view of Ogura et al. (U.S. 6,506,662 B2).

In reference to claims 1-5 and 12-13, Sakaguchi et al. (Fig.1-5) in a related method to form buried oxide films teach placing the substrate (23) into a vacuum chamber, the substrate being treated with a fluid other than molecular oxygen, said fluid comprising hydrogen and said hydrogen is a surface inhibiting agent; evacuating the vacuum chamber to a first pressure; and implanting ions into the substrate (23) to form a buried oxide layer under a top silicon layer (22), where the fluid inhibits formations of threading dislocations in the top silicon layer (22) for reducing a defect density of the processed substrate; and selecting the fluid from fluids that inhibit formations of threading dislocations in the top silicon layer (22) for reducing a defect density of the processed substrate (23) (column 2, line 53 – column 16, line 25).

Sakaguchi et al. fail to teach implanting oxygen atoms while the fluid other than pure molecular oxygen is present as a background gas. However, Ogura et al. (Figs.1C-3) in a related method to form a buried oxide layer by ion irradiation teach using implanting oxygen atoms while a fluid other pure molecular oxygen is present as a background gas (column 3, lines 60 – 65, column 4, lines 1 – 4, column 8, line 61 – column 9, line 2 and column 9, lines 54 – 62). Therefore, it would have been obvious to one of ordinary skill in the art to include a fluid other than pure molecular oxygen as taught by Ogura et al. in the buried oxide formation method, and furthermore since this would increase the manufacturing condition for the formation of said buried oxide (column 8, line 61 – column 9, line 2).

In reference to claims 6 and 7, Sakaguchi et al. in combination with Ogura et al. substantially teach all aspects of the invention but fail to teach the first pressure is less

than about 1×10^{-5} Torr and a second pressure less than about 1×10^{-3} . However, the examiner takes official notice that the selection of the claimed ranges is obvious because it is a matter of determining optimum process condition by routine experimentation with a limited number of species.

In reference to claims 8 and 9, Sakaguchi et al. in combination with Ogura et al. teach controlling the amount of fluid introduced into the vacuum chamber based upon a parameter measured in the chamber, said parameter consisting from the group consisting of ion concentration and temperature (column 2, line 53 – column 16, line 25).

Allowable Subject Matter

8. Claims 10 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Claims 12 and 13 are allowed.

10. The following is a statement of reasons for the indication of allowable subject matter: Sakaguchi et al. (Fig.1-5) in a related method to form buried oxide films teach placing the substrate (23) into a vacuum chamber, the substrate being treated with a fluid other than molecular oxygen, said fluid comprising hydrogen and said hydrogen is a surface inhibiting agent; evacuating the vacuum chamber to a first pressure; and implanting ions into the substrate (23) to form a buried oxide layer under a top silicon layer (22), where the fluid inhibits formations of threading dislocations in the top silicon layer (22) for reducing a defect density of the processed substrate; and selecting the

fluid from fluids that inhibit formations of threading dislocations in the top silicon layer (22) for reducing a defect density of the processed substrate (23) (column 2, line 53 – column 16, line 25). However, Sakaguchi et al. neither teach nor suggest measuring a decrease in the ion beam current level due to the fluid in the chamber; and adjusting the fluid level based upon the measured ion beam current level.

Response to Arguments

11. Applicant's arguments with respect to claim 12 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. Papers related to this application may be submitted directly to Art Unit 2823 by facsimile transmission. Papers should be faxed to Art Unit 2823 via the Art Unit 2823 Fax Center located in Crystal Plaza 4, room 3C23. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2823 Fax Center number is **(703) 305-3432**. The Art Unit 2823 Fax Center is to be used only for papers related to Art Unit 2823 applications.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Julio J. Maldonado** at **(703) 306-0098** and between the hours of 8:00 AM to 4:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via julio.maldonado@uspto.gov. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (703) 306-2794.


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Any inquiry of a general nature or relating to the status of this application should be directed to the **Group 2800 Receptionist** at (703) 308-0956.

JMR
3/21/03


George Fourson
Primary Examiner
2823